GPRS Router

GR3001
USER'S MANUAL

Doc Rev 1.0
7 Nov 2007

Copyright © 2005 Taiko Network Communications Pte Ltd

GR3001 User Manual

1. **Introduction** 3
2. **Applications** 3
3. **Specification** 5
4. **Layout and Connections** 6
5. **Installation & Configuration** 8

Copyright © 2007 Taiko Network Communications Pte Ltd

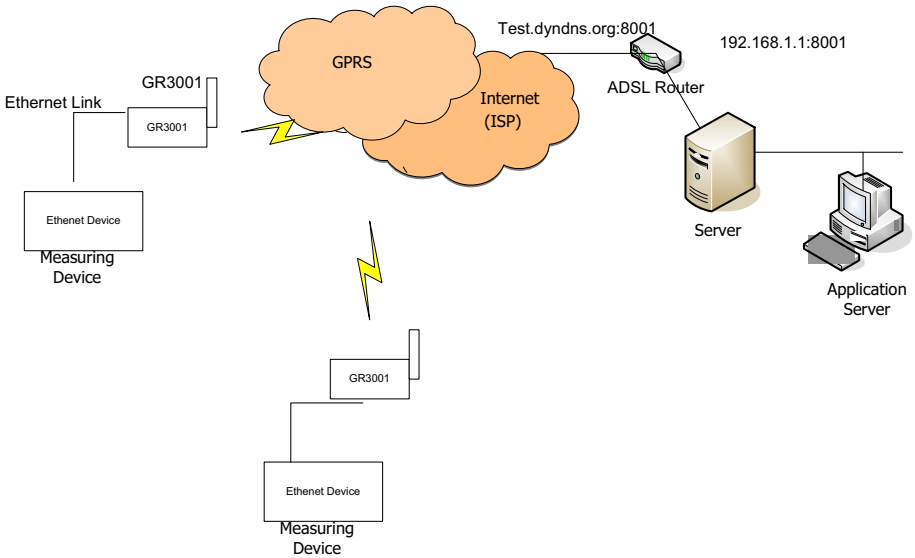
1. Introduction

Taiko GR3001 is a powerful GSM/GPRS Data Terminal or Router. GR3001 featured embedded protocols such as TCP/UDP/IP, NAT, DHCP and proxy. GR3001 allows remote equipments for wireless connection over GPRS network. As such it's very suitable for applications such as data acquisition, and surveillance system that requires constant relay of data between the host and remote site. GR3001 data terminal/ router comes with an embedded platform built-in with a processor and can work as a stand-alone device at the remote site.

GR3001 not only support router gateway function to allow remote monitoring of ethernet device over GPRS, it also allow creation of virtual com port over GPRS and hence allow transparent communication between host and the remote serial device

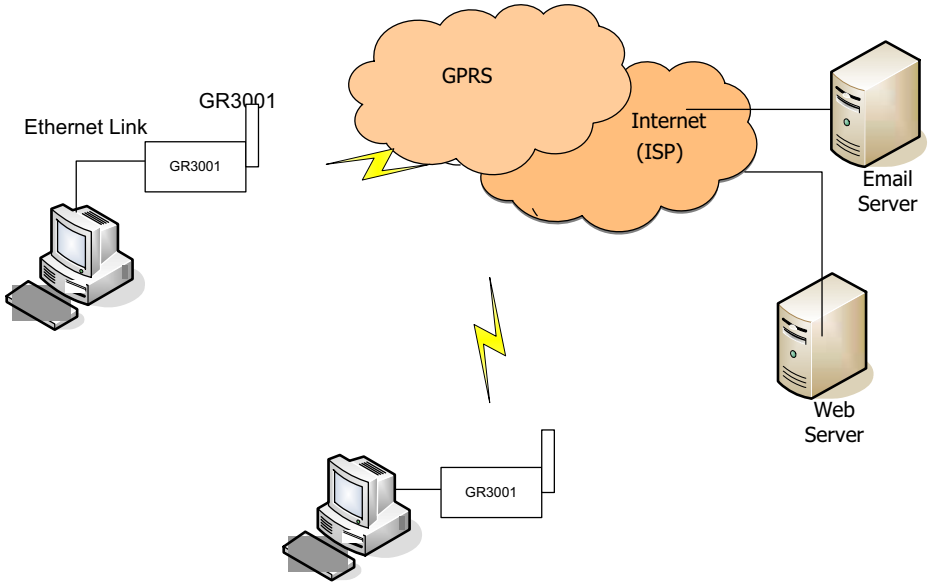
This manual show how to install GR3001 and the correct use of it. Please read the manual in details before use

2. Applications



Connection to Ethernet Device using GR3001

Copyright © 2007 Taiko Network Communications Pte Ltd



Connection to Server (Web server, FTP server, Email Server…)

Copyright © 2007 Taiko Network Communications Pte Ltd

3. Specification

Product Feature :

- Serial Data interface DTE and DCE
- Ethernet Data interface
- 50Ω/SMA Female for antenna
- Watch-Dog
- Remote configuration

GPRS Packet Data :

- GSM/GPRS Quad Band
- GPRS Class B
- GPRS Multi-slot Class 10
- 4 slot downlink (86.6kbps), 1 slot uplink (42.8kbps)
- 3GPP GSM Phase 2+

Software Features :

- TCP/UDP, IP
- NAT
- DHCP Server
- DNS Proxy

Hardware / Software Interface :

- Antenna Interfaces
  -SMA (50 ohm) RF connector
- Connector Interface including:
  - RS232 D-sub9 Male for configuration
  - RS232 D-sub9 Female for Data
  - 1x RJ45 (10/100M) LAN port
  - SIM card holder
  - Power LED indicator
  - GSM LED indicator
  - Ethernet Link LED indicator
  - GPRS Link LED indicator

General Information :

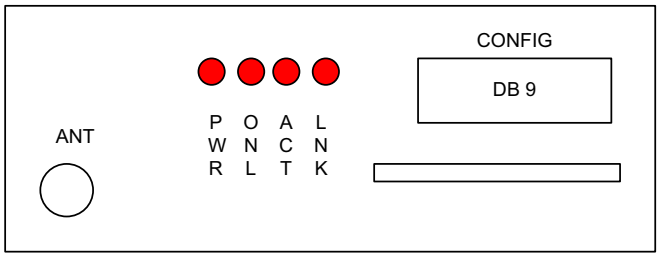
- Dimension (D x W x H): 104 x 80 x 42mm
- Weight: 550 g
- Operating Temperature: -20 ~ + 70 °C
- Storage Temperature: - 40 ~ +85 °C
- Relative Humidity 95% @ +40 °C
- Enclosure Rating: Industrial IP40
- Power Supply: 5~36Vdc

Copyright © 2007 Taiko Network Communications Pte Ltd

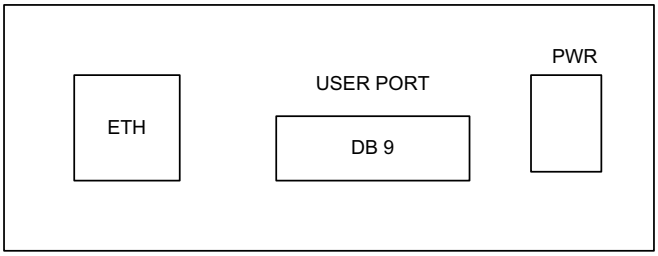
4. Layout and Connections

Panel View

BACK VIEW



FRONT VIEW



LED Indication

LED	Color	State	Description
Power	Red	Always On	Power On
		Always Off	Power Off
Online (ONL)	Red	Always On	Connected to Data Center
		Always Off	Not Connected to Data Center
Active (ACT)	Red	Blink	Transmitting
		Always Off	Not Transmitting
Link (LNK)	Red	Always On	Ethernet Link
		Always Off	No Ethernet Link

Front View Interface Ports

Copyright © 2007 Taiko Network Communications Pte Ltd

Ports	Description	
Config Port	RS232, DB9 Female	2: Tx
		3: Rx
		5: Gnd
Antenna	50ohm/SMA for antenna connection	

Rear View Interface Ports

Port	Description		
Power	+5~36Vdc		
Ethernet	10/100Base, ethernet connection		
Data Port	RS232 or RS485 DB9 Male	RS232	2: RX
			3: TX
			5: GND
			7: RTS(OUT)
			8: CTS(IN)
		RS485	2: A
			3: B
			5: GND

Copyright © 2007 Taiko Network Communications Pte Ltd

5. Installation & Configuration

This section describes the installation and configuration of the GR3001

Accesories requirements:

1. GPRS SIM Card
2. RS232 straight cable (Male end – Female end) for Data port connection. If serial device is not a DCE than a RS232 cross cable is required (Female end – Female end)
3. RS232 straight cable (Male end – Female end) for Configuration connection
4. UTP Cat-5 cable for etherent connection via ethernet switch. If direction connection to ethernet device than a cross UTP cable is required

Steps

1. Insert SIM card into SIM card slot
2. Connect the Data Port using the RS232 cable
3. Connect to Ethernet Port using the UTP cable
4. Connect to a PC for configuration using RS232 cable
5. Connect the antenna to the SMA connector
6. Connect the power and power up

Preparation
1) Before configuration, it is good to prepare the following information
Server Provider Information

- APN
- Dial Code
- PPP user name (if any)
- PPP password (if any)

Data Center Information

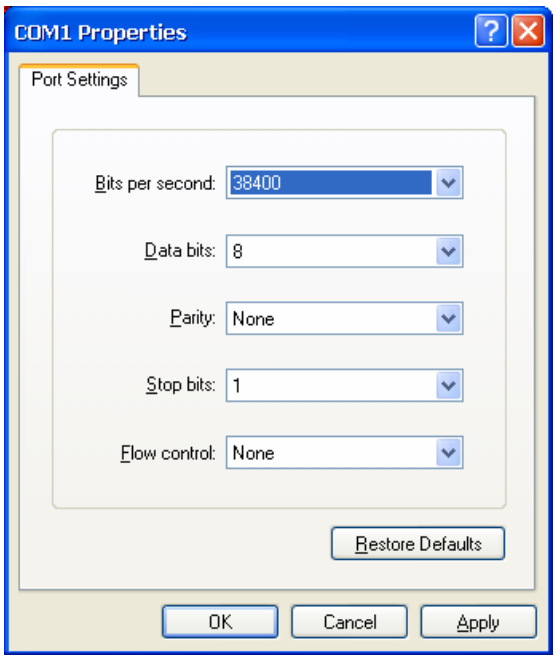
- Data Center IP address
- Data Center Port
- Protocol used (TCP or UDP)

Serial Port information
Baud rate
7 or 8 bits
Parity
Stop bit
Flow control

Copyright © 2007 Taiko Network Communications Pte Ltd

Configuration
A. By Console

1) Start the hyperterminal as below



2) When prompt for login, enter root and return

3) When prompt for password, enter 1234 and return

Main menu will appear.

B. By Telnet

Alternatively, user can use telnet for configuration

Example >telnet 192.168.1.1

See next section for menu details

C. Quick Configuration

From the main menu, select quick configuration
The qiuck configuration ,menu will take the user step by step for express setup

Copyright © 2007 Taiko Network Communications Pte Ltd

Step 1 Primary IP： Remote device will connect to this IP as the Data Center IP address.
Step 2 Primary Port： Remote device will use this port for connection to Data Center Port address.
Step 3 Protocol： Select UDP, TCP or ETCP. This has to be same as the Data Center protocol selction.
Step 4 Serial Comm：Configure Baud rate, nos of bit, parity, stop bit and flow control.

CONFIGURATION MENU

1. WIRELESS NETWORK CONFIGURATION SETTINGS

MAIN MENU>ADVANCED SETTINGS>WIRELESS NETWORK

1 APN
<Access Point Network , example INTERNET, SUNSURF, E-IDEA>
2 SERVICE CODE
<Dial code to GPRS : example *99***1#
3 PPP USER NAME
<blank if not required>
4 PPP PASSWORD
<blank if not required>
5 ICMP HOST ADDRESS
<IP address or name for keep alive path>
6 MOBILE PARAMETER
<default is 60, to disable enter 0>

2. DATA CENTER CONFIGURATION SETTINGS

MAIN MENU>ADVANCED SETTINGS>DATA CENTER

1 DOMAIN NAME
<Blank if not used. If connection to Primary Data Center IP and Secondary Data Center IP fail, connection to the domain name is attempted after resolving to IP. Domain Name is used when the there is no fixed Data Center IP. Application of DDNS thru service provider is required.>

2 PRIMARY DATA CENTER IP
<First Data Center IP to connect to>
3 PRIMARY DATA CENTER PORT
<First Data Center Port to connect to>
4 SECOND DATA CENTER IP
<Alternate Data Center IP to connect to if primary Data Center IP fail, blank if not required>
5 SECOND DATA CENTER PORT

Copyright © 2007 Taiko Network Communications Pte Ltd

<Alternate Data Center Port to connect to if primary Data Center IP fail, blank if not required>

6 SWITCH CONDITION
<Number of retry to connect to primary data center IP before switching to attempt to connect to secondary primary data center IP, likewise, for swtiching from secondary primary data center IP to primary data center IP. Blank or zero for no switching>

3. CONNECTION MANAGEMENT

MAIN MENU>ADVANCED SETTINGS>CONNECTION MANAGEMENT

1 ON LINE MODE (Online refer to connection between the remote GR3001 with Data Center
:ONLINE FOR EVER <always maintain connection>
: ON DATA <Online when there is data at the serial comport port for transmission. Connection is established automatically upon power up, and maintain connected, but not yet on line, during keep alive interval time. When keep alive interval is up and still no data for transmission, connection will be breaked. Connection will be established again when there is data ready for transmission>
: FIXED TIME INTERVAL < Online connection/disconnection upon pre-defined time interval >

2 PROTOCOL
<choise of UDP, TCP and ETCP protocol.
UDP is connection based. It provided faster data transfer and is recommeded if data error rate is low.
TCP is non-connection based. It is slower than UDP but offer reliable data transfer.>

3 HEART BEAT INTERVAL
<time interval for sending a 'heart beat' to data center. Blank or zero for none>

4 HEART BEAT TIMEOUT
<timeout for receiving reply to 'heartbeat' sent from Data Center. Blank or zero for none >

5 TIME TO LIVE
< time in seconds for 1 time connection duration>

6 ATTEMPT INTERVAL
<time interval in seconds before retry to reconnect to data center after retry failure or disconnection>

4. DATA MANAGEMENT

MAIN MENU>ADVANCED SETTINGS>DATA MANAGEMENT

Copyright © 2007 Taiko Network Communications Pte Ltd

1 FRAME LENGTH
<maxi data frame length receive at the serial port before transmit to Data Center. Zero for in-effect. Maiximum is 1400>
2 USER DATA ARRIVING TIMEOUT
<time in msec to wait for data from the serial port before transmit to Data Center even frame length has not reached.>

3 USER DATA BUFFER LENGTH
<When GPRS speed gets slower than the rate of data from the serial port, buffering is used. If buffer is fulled and flow control is in used, the serial driver will inform DTE to stop sending. Maximum buffer size is 2M>

5. SERIAL PORT SETTINGS

MAIN MENU>ADVANCED SETTINGS>USER'S SERIAL PORT

1 BAUD RATE
<example 9600,115200, 34800>
2 DATA BIT
<5,6,7 or 8>
3 PARITY
<even,odd, or none>
4 STOP BIT
<1 or 2>
5 FLOW CONTROL
<none, hardware or software>

6. GATEWAY

MAIN MENU>ADVANCED SETTINGS>GATEWAY

1 ETHERNET PORT IP
<gateway IP address of this unit>
2 MASK
<gateway netmask>
3 DHCP START IP
<support DHCP, IP address is assigned by this gateway. IP has to be of same LAN>
4 DHCP END IP
<support DHCP, IP address is assigned by this gateway. IP has to be of same LAN>
5 LEASE TIME
<DHCP Leasing time>

6 DHCP SERVICE

Copyright © 2007 Taiko Network Communications Pte Ltd

<Enable or disable DHCP>
7 PORT MAPPING
<Forward the port of this gateway to the port of other local LAN IP. Up to 10 port mapping is supported.
8 NAT
< enable or disable NAT>
9 ROUTE
<support up to 10 Route.
For example 192.168.2.0 255.255.255.0 192.168.3.1
Implies Network 192.168.2.x is routed via 192.168.3.1 >
10 DMZ HOST IP
<IP address of DMZ Host>

7. RESET TO FACTORY DEFAULT

MAIN MENU>ADVANCED SETTINGS>RESET TO DEFAULT

8. SHOW CURRENT CONFIGURATION

MAIN MENU>ADVANCED SETTINGS>SHOW ALL CONFIGURATIONS

9. AGENT

MAIN MENU>ADVANCED SETTINGS>AGENT

1 SERVER IP
2 SERVER PORT

<Note: The agent serve to relay data from the Data Center to the server IP/Port as per defined. Vice versa, the defined server can send data to the Data Center via the router>

10. EMBEDDED DATA CENTER

MAIN MENU>ADVANCED SETTINGS>EMBEDDED DATA CENTER

1 TURN ON/OFF CENTER
2 PROTOCOL
3 PORT
4 MAXIUM TERMINAL NUM(<=10)

<Note: What is embedded data center?>
<The embededded data center allows remote units to communicate with each others via this router, setup as an embedded data center. Allows point to point and point to multipl point setup. Maxi number of mulitple point at embedded data center end is 10.>

Copyright © 2007 Taiko Network Communications Pte Ltd

11. UNIT MANAGEMENT

MAIN MENU>UNIT MANAGEMENT

1. SHOW IMEI
2. SHOW VERSION
3. SHOW STATUS
4. FIRMWARE UPGRADE
5. CHANGE PASSWORD
6. CURRENT TIME
7. CHANGE TIME
8. WIRELESS MODULE

Copyright © 2007 Taiko Network Communications Pte Ltd

APPENDIX
Factory Default Settings

WIRELESS NETWORK
- APN:INTERNET
- SERVICE CODE:*99***1#
- PPP USER NAME:
- PPP PASSWORD:
- ICMP HOST IP OR DOMAIN NAME:
- MOBILE PARAMETER:60

DATA CENTER
- DOMAIN NAME:
- PRIMARY DATA CENTER IP:
- PRIMARY DATA CENTER PORT:
- SECOND DATA CENTER IP:
- SECOND DATA CENTER PORT:
- SWITCH CONDITION:0

CONNECTION MANAGEMENT
- ON LINE MODE:ON LINE FOR EVER
- PROTOCOL:ETCP
- HEART BEAT INTERVAL(s):100
- HEART BEAT TIMEOUT(s):300
- TIME TO LIVE(s):0
- ATTEMPT INTERVAL(s):900

DATA MANAGEMENT
- FRAME LENGTH(byte):2000
- USER DATA ARRIVING TIMEOUT(100ms):1
- USER DATA BUFFER LENGTH(byte):128000

USER'S SERIAL PORT
- BAUD RATE(bps):38400
- DATA BIT:8bit
- PARITY:NO CHECK
- STOP BIT:1bit
- FLOW CONTROL:NO CONTROL

GATEWAY
- ETHERNET PORT IP:192.168.1.1
- MASK:255.255.255.0
- DHCP START IP:192.168.1.20
- DHCP End IP:192.168.1.254
- LEASE TIME(s):86400
- DHCP SERVICE:ON
- NAT:ON
- DMZ HOST IP:

CONFIGURATION LOGIN

Copyright © 2007 Taiko Network Communications Pte Ltd

Login：root
Password：1234

AGENT
SERVER IP:
AGENT PORT:
EMBEDDED DATA CENTER
DATA CENTER:OFF
PROTOCOL:ETCP
PORT:9000
MAXIUM TERMINAL NUM(<=10):1

Copyright © 2007 Taiko Network Communications Pte Ltd